UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/061,815	02/01/2002	John T. Peoples	1434	1892

9941	7590	11/06/2003

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EXAMINER
TRAN, QUOC DUC

ART UNIT	PAPER NUMBER
2643	

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>01 February 2002</u> .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-20</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>01 February 2002</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)   4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5) ☐ Notice of Informal Patent Application (PTO-152)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2,3</u> .   6) ☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2.   Claims 1, 2, 4-8, 10-17, 19 and 20 are rejected under 35 U.S.C. 102(e) as being

anticipated by Wallance et al (6,466,649).

Consider claim 1, Wallance et al teach a method for estimating distances to irregularities

on a subscriber loop (col. 1 lines 6-10) comprising the steps of measuring a loop response as a

function of frequency at a loop end, weighting the loop response with a pre-selected prolate

spheroidal wave function to produce a weighted response, and generating a spectral analysis of

the weighted response wherein the estimated distances to the irregularities correspond to peaks in

the spectral analysis (col. 1 lines 60-67; col. 2 lines 5-31).

Consider claim 2, Wallance et al teach the method therein the step of generating the

spectral analysis of the weighted function includes the steps of transforming the weighted

function via a Fourier Transform to produce a transformed function, and identifying the peaks in

the transformed function to obtain the estimated distances (col. 2 lines 32-43).

Consider claim 4, Wallance et al teach the method wherein the loop response is the real

part of the return loss of the loop with respect to a reference impedance and the step of

measuring includes the step of measuring a swept-frequency signal proportional to the real part

of the return loss (col. 2 lines 15-43; col. 2 line 64 – col. 3 line 8; col. 5 line 24 – col. 6 line 22).

Consider claim 5, Wallance et al teach the method wherein the loop response is

composed of exponentially decaying co-sinusoids and the step of measuring includes the step of

measuring a swept-frequency signal proportional to the loop response (see Fig. 4).

Consider claim 6, Wallance et al teach a method for estimating distances to irregularities

on a subscriber loop (col. 1 lines 6-10) comprising the steps of measuring the real part of the

return loss of the loop using a pre-selected reference impedance over a band of frequencies to

generate a loop response (col. 2 lines 15-43; col. 2 line 64 – col. 3 line 8; col. 5 line 24 – col. 6

line 22), weighting the loop response with a spectral window to generate a weighted loop

response, iteratively multiplying the weighted loop response with a pre-determined multiplier

function to produce a characteristic function, transforming each iteratively produced

characteristic function to determine a set of corresponding characteristic values, and selecting

local maxima from the set of characteristic values as estimates to the distances to the

irregularities (col. 1 lines 60-67; col. 2 lines 5-31; col. 3 lines 10-49).

Consider claim 7, Wallance et al teach the method wherein the step of weighting includes

the step of multiplying the loop response by a pre-selected prolate spheroidal wave function to

produce the weighted response (col. 3 lines 37-49).

Consider claim 8, Wallance et al teach the method wherein the step of transforming

includes the step of Fourier Transforming the weighted loop response (col. 2 lines 32-43).

Consider claim 10, Wallance et al teach the method wherein the multiplier function is a

co-sinusoidal function and the step of iteratively multiplying includes the step of incrementally

selecting a new period for the co-sinusoidal function with reference to the length of the loop

(Fig. 4; col. 3 lines 37-49; col. 7 line 48 – col. 8 lines 27).

Consider claim 11, Wallance et al teach the method wherein the multiplier function is a

co-sinusoidal function and the step of iteratively multiplying includes the step of incrementally

selecting a new period for the co-sinusoidal function with reference to intermediate distances

along the loop (Fig. 4; col. 3 lines 37-49; col. 7 line 48 – col. 8 lines 27).

Consider claim 12, Wallance et al teach the method further including the steps, after the

step of selecting, of hypothesizing a set of loops having irregularities commensurate with the

estimated distances to the irregularities, and selecting one of the loops from the set by comparing

the measured loop response to a corresponding loop response from the selected one of the loops

(col. 3 lines 10-49).

Consider claim 13, Wallance et al teach a method for determining a configuration for a

subscriber loop (col. 1 lines 6-10) comprising the steps of measuring a loop response as a

function of frequency at a loop end, weighting the loop response with a weight function to

produce a weighted response, generating a spectral analysis of the weighted response wherein the

estimated distances to the irregularities correspond to peaks in the spectral analysis,

hypothesizing a set of loops having irregularities commensurate with the estimated distances to

the irregularities, and selecting one of the loops from the set by comparing the measured loop

response to a corresponding loop response from the selected one of the loops (col. 1 lines 60-67;

col. 2 lines 5-31; col. 3 lines 10-49).

Consider claim 14, Wallance et al teach the method wherein the step of weighting includes the step of weighting the loop response with a prolate spheroidal wave function waveform (col. 2 lines 10-31).

Consider claim 15, Wallance et al teach a method for determining the configuration of a subscriber loop (col. 1 lines 6-10) comprising the steps of measuring the real part of the return loss of the loop using a pre-selected reference impedance over a band of frequencies to generate a loop response (col. 2 lines 15-43; col. 2 line 64 – col. 3 line 8; col. 5 line 24 – col. 6 line 22), weighting the loop response with a spectral window to generate a weighted loop response, iteratively multiplying the weighted loop response with a pre-determined multiplier function to produce a characteristic function, transforming each iteratively produced characteristic function to determine a set of corresponding characteristic values, hypothesizing a set of loops wherein each of the loops in the set has a set of characteristic values commensurate with the set of characteristic values of the measured loop, and selecting one of the loops from the set of loops based upon a comparison of each set of characteristic values of each of the loops to the set of characteristic values of the measured loop (col. 1 lines 60-67; col. 2 lines 5-31; col. 3 lines 10-49).

Consider claim 16, Wallance et al teach the method wherein the step of weighting includes the step of multiplying the loop response by a pre-selected prolate spheroidal wave function to produce the weighted response (col. 2 lines 10-31).

Consider claim 17, Wallance et al teach the method wherein the step of transforming includes the step of Fourier Transforming the weighted loop response (col. 2 lines 32-43).

Consider claim 19, Wallance et al teach the method wherein the multiplier function is a co-sinusoidal function and the step of iteratively multiplying includes the step of incrementally selecting a new period for the co-sinusoidal function with reference to the length of the loop (Fig. 4; col. 3 lines 37-49; col. 7 line 48 – col. 8 lines 27).

Consider claim 20, Wallance et al teach the method wherein the multiplier function is a co-sinusoidal function and the step of iteratively multiplying includes the step of incrementally selecting a new period for the co-sinusoidal function with reference to intermediate distances along the loop (Fig. 4; col. 3 lines 37-49; col. 7 line 48 – col. 8 lines 27).

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 3, 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallance et al (6,466,649) in view of Franchville (5,949,236).

Consider claim 3, Wallance et la teach the method wherein the step of generating the spectral analysis of the weighted function includes the steps of transforming the weighted function via a Fourier Transform to produce a transformed function, and identifying the peaks in the transformed function to obtain the estimated distances (col. 2 lines 32-43). Wallance et al did not suggest transforming the function using "Fast" Fourier Transform. However, Franchville

teaches the method for determining the fault in a transmission line wherein the transformation of the function is perform using Fast Fourier Transform (col. 15 line 55 – col. 16 line 29).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to utilize the teaching of Franchville into view of Wallance et al in order to process the obtained signal for analysis.

Consider claims 9 and 18, Wallance et al teach the method wherein the step of transforming includes the step of Fourier Transforming the weighted loop response (col. 2 lines 32-43). Wallance et al did not suggest transforming the function using "Fast" Fourier Transform. However, Franchville teaches the method for determining the fault in a transmission line wherein the transformation of the function is perform using Fast Fourier Transform (col. 15 line 55 – col. 16 line 29).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to utilize the teaching of Franchville into view of Wallance et al in order to process the obtained signal for analysis.

Conclusion

5.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

6.   Any response to this action should be mailed to:

>   Commissioner of Patents and Trademarks
>   Washington, D.C. 20231
>   Facsimile responses should be faxed to:
>   **(703) 872-9314**
>   Hand-delivered responses should be brought to:
>   Crystal Park II, 2121 Crystal Drive
>   Arlington. VA., Sixth Floor (Receptionist)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Quoc Tran** whose telephone number is **(703) 306-5643**. The examiner can normally be reached on Monday-Thursday from 8:00 to 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Curtis Kuntz**, can be reached on **(703) 305-4708**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the **Technology Center 2600** whose telephone number is **(703) 306-0377**.

Quoc D. Tran
Patent Examiner AU 2643
November 2, 2003